

Back to Basics ~ Core Concepts in Diabetes Mellitus

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You may have heard that Diabetes Mellitus is a disorder of carbohydrate, fat and protein metabolism that results in high blood glucose and other metabolic disturbances. But to gain insight into the management of diabetes it is essential to have a good understanding of the **Core Concepts** involved.

Diabetes is a **Common, Costly and Challenging Chronic Condition** with no satisfactory **Cure** at present. It is **Classified** into two major types. Although people who develop diabetes may **Complain** of **Classic** symptoms many do not know that they have it and continue to feel relatively well despite an underlying cardiovascular risk. Uncontrolled diabetes can result in **Complications**, but the good news is that diabetes is **Controllable!** **Control** can and should be achieved and maintained in the **Community**, using 3 **Cornerstones** of treatment together with regular **Checking** of outcomes. But that is not all - **Choice Care** should be a “Team” facilitated process that has **Continuity**, is **Congruent** and which strives for **Concordance** between the Team and the person with diabetes. Good **Communication** is vital and will give that person the best chance of achieving **Confidant Self-Care**. But, many weird **Conceptions** are associated with the condition and successful management thus requires a **Change** in our way of thinking before any of this is possible.

Let us have a look at these 22 **Core Concepts**:

Diabetes is **Common**: Diabetes affects an estimated 8-10 % of the South African population. Worldwide, the number of people affected by it is increasing dramatically.

Diabetes is **Costly**: Figures for the costs of diabetes management in South Africa are unknown, but in a US study where 4.5% of the population had diabetes, they accounted for 14.7% of health dollars spent. Much of this cost relates to over-servicing, unnecessary hospitalisation, and treating the complications of poorly controlled diabetes.

Diabetes is **Challenging**: In the Diabetes Attitudes, Wishes and Needs (DAWN) Study, only about 10 % of the respondents described their “well being” as “good”. 1/3 described their “well being” as “poor” and about 56% as “Moderate”. Conclusions from this large psychosocial study were that:

- Living with diabetes is “demanding” and can be “stressful”. About 50% of patient experienced severe anxiety about their weight, the future and hypoglycaemia
- This psychosocial stress has serious consequences. People who have diabetes experience higher rates of depression (10-30%) and eating disorders (5-10%) than the general population
- Stigma and lack of awareness make living with diabetes more difficult
- Social support and emotional wellbeing are pivotal to achieve effective self-management (at least as important as medication)

No **Cure**: At this time there is no satisfactory and cost-effective cure for diabetes. Islet cell transplants, whilst providing great hope along the road to a complete cure for Type 1 diabetes, presently just swap a hormone deficiency (Type 1 diabetes) for a non-viral acquired immune deficiency (secondary to the necessary immunosuppressive therapy). They are therefore only suitable for those people who have severe complications of uncontrolled diabetes (e.g. renal failure). The potential negative side effects of a transplant and follow-up therapy are a lesser threat compared with their present poor quality of life and tendency to increased morbidity and mortality. Diabetes is thus chronic.

Chronic means lifelong. A lifetime of “control” of lifestyle, blood glucose, blood pressure, and serum cholesterol and body weight is needed. This can be a large burden to bear.

Diabetes is a “**Condition**”. Diabetes is not a disease – uncontrolled diabetes is. Well-controlled diabetes is a condition that is a risk factor for disease. A person who has diabetes should be regarded as “well”, and not unnecessarily put into a hospital. If a person with diabetes is treated as “well” rather than “sick”, they are more likely to continue functioning as an active and useful member of their family and community.

Diabetes is **Classified** into 2 major types:

- Type 1 (previously known as Insulin Dependent Diabetes Mellitus) consisting of 10% of the population who have diabetes. This is an autoimmune condition in which the body turns on itself and destroys the cells that produce the blood glucose lowering hormone (chemical messenger) insulin. It is generally found in younger people and children and should be easily diagnosed with the onset of severe “Classic” symptoms. Treatment requires Hormone Replacement Therapy (two to four insulin injections daily for life). The person is otherwise healthy if well controlled.
- Type 2 (previously known as Non-Insulin Dependent Diabetes Mellitus) consisting of 90% of the population who have diabetes. This is a complex, serious and progressive disorder where a relative lack of insulin occurs together with resistance to its action. Type 2 diabetes has a strong association with the Western lifestyle of “gluttony and sloth”. Lack of exercise, poor eating habits and weight gain result in insulin resistance and eventual diabetes. Half of the people who have Type 2 diabetes are unaware of it although they are at risk of developing heart and blood vessel complications. A good indicator of risk is a “beer gut” or fat tummy. Previously Type 2 diabetes was a problem of older people, but tragically, more young people including children are being diagnosed. Treatment always begins with lifestyle change (exercise, healthy eating and weight loss) to which tablets and / or insulin injections will probably be added.

People with undiagnosed diabetes or whose diabetes is uncontrolled may **Complain of Classic** symptoms: These may include the passing of excessive amounts of urine (polyuria), extreme thirst (polydipsia), frequent night time urination (nocturia which may present as bed-wetting in children) and weight loss. These usually are found with Type 1 diabetes. In Type 2 diabetes these symptoms may be present but often the only complaints are of feeling “tired” and “overworked”. This can result in up to a 10-year delay in diagnosis – by this time 30% of patients already have a chronic complication of diabetes.

Uncontrolled diabetes may result in **Complications**: These can be:

- “Acute” (metabolic) complications which are caused by diabetes treatment or lack of it:
 - Hypoglycaemia [low blood glucose – give sugar]
 - Hyperglycaemia [high blood glucose] or ketoacidosis [a serious illness due to lack of insulin]. Acute complications are easily treated if caught in time. Even better is prevention! This is the function of the Diabetes Team working together with the patient and their family.
- “Chronic” (mainly cardiovascular) complications which may be
 - Macro-vascular:
 - heart attack (myocardial infarction)
 - stroke (cerebrovascular accident) and
 - amputation (peripheral vascular disease) or
 - Micro-vascular: disease of the small blood vessels in the
 - eyes (retinopathy)
 - heart (cardiomyopathy)
 - kidneys (nephropathy)
 - nerves (neuropathy)
 - skin (dermopathy) and
 - sexual organs (erectile dysfunction).

These are preventable! How? Read the next line....

Diabetes is **Controllable**: Daily glycaemic control is now attainable in the well educated patient who can self monitor their blood glucose responses to life and who has access to the oral agents, insulins and regimens that are now available. The Diabetes Control and Complications Trial (DCCT) and the United Kingdom Prospective Diabetes Study (UKPDS), have shown that with intensive treatment and tight glycaemic control, chronic micro-vascular complications can be **delayed** or even **prevented** in type 1 and type 2 diabetes respectively! Ideal control for each person must be individualised with his or her Diabetes Team.

Diabetes and many of its complications can and should be controlled in the **Community** wherever possible. With the right counselling and education process people with diabetes are quite capable of managing their condition at home, work or school. Not only is this financially more cost-effective, but it is also more appropriate in terms of the level of care often needed. A person who is managed in the community (e.g. for hyperglycaemia + ketonuria / hypoglycaemic coma) is kept in a “wellness” role which bodes better for their future psychosocial wellbeing. It is obvious that this scenario requires good diabetes team services, a well-educated patient and family and good access to communication with and care from the diabetes Team. Groups such as Diabetes Associations are vital to

provide support where most of diabetes care occurs – in the community. Encourage your patients to join Diabetes South Africa. It is not a bad idea for you to join as well!

3 Cornerstones of treatment of diabetes are exercise, healthy eating and the right medication at the right dose and at the right time.

Checking or regular monitoring of outcomes is essential to ensure that diabetes is “Treated to Target”. This involves frequent self blood glucose checks by the patient. In addition, patients need to ensure that they get their A1C* checked 2-4 times yearly. Never neglect to also check blood pressure, serum cholesterol, microalbuminuria, body weight (growth in kids), eyes (annual Ophthalmologist examination) and feet (daily self and annual Podiatrist check) as well!

*The A1C is a simple and “gold standard” laboratory test of good diabetes control – aim for a target of 6-7% in Type 1 diabetes and 6-6.5% in Type 2 Diabetes

Choice diabetes **Care** is a lifelong process. For care to be successful there must be:

- **Continuity:** Care is organised around a person who has a life full of events both good and bad and aims to build up a coherent picture of their needs and their health status over time. Ideally the same caregivers should facilitate this care at each visit to improve the continuity of thought, process and action.
- **Congruence** in care: everyone in the Health Team should not only be giving the same information, but should have the same insightful approach (based on a set of commonly shared and communicated values attitudes and beliefs) towards diabetes management. The person with diabetes will be reassured by the agreement and harmony they see and be more **Confident** to practice what they have been taught.

Care should be **managed**:

- **Self-management and care** is vital and requires patients to do more for themselves and to assume more responsibility (people are not inherently comfortable with this role). The focus is on the **prevention** of ill health and not its treatment.
- Facilitation of self-care by a **Management Team** of health care professionals with **specialised** training and knowledge has been shown to be essential in the control of diabetes. They provide counselling, education, diagnosis, treatment and lifestyle options, support and motivation. This reduces sickness, death, costs and hospitalisation due to diabetes. In addition to the Doctor, input from a Diabetes Educator, Dietician, Podiatrist, Ophthalmologist, Pharmacist, Biokineticist and Psychologist (amongst others), is necessary at different times to maximise care and quality of life. The doctor is not the head of this team – it is the person with diabetes and their family. Groups such as Diabetes Associations are vital to provide support where most of diabetes care occurs – in the community.
- A person with diabetes has to balance the demands of life, diabetes and diabetes management with the resources (personal, structural, financial, friends and family etc.) available to them. There must be **Concordance** or agreement within the Team (including the patient) of the degree of tension that is being experienced and of their ability to cope with it. This will go a long way to ensuring an open, trusting care process and achieving maximum adherence to therapy. Of course agreement is not possible without good **Communication** – patient and diabetes team must be open and truthful at all times and most importantly must LISTEN to each other!

Conceptions of diabetes are often coloured by past experiences of diabetes treatment and failures. A set of values, attitudes and beliefs develop which guide future feelings and behaviours towards diabetes. These must be assessed and factored into any treatment plan.

A Change in your way of thinking (conceptions) is needed to help others change and adjust to a condition that is mainly self-managed and that requires life-long care and control. Change however, involves examining our own attitudes, values and beliefs about something (in this case diabetes) for it is these “internal” drives that determine our eventual behaviour and what our patients / clients experience as a result.

If you change you can help to **Change Diabetes Care**

Changing Diabetes Care

Have a look at the following definition:

Diabetes Mellitus: a metabolic disorder of multiple aetiology characterised by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both.

Question: where is the **person** who has this disorder, in this common definition?

Traditionally, the less glamorous chronic conditions have comprised a relatively small part of medical school curricula, leaving the new graduate without the necessary interest or the skills to effectively manage a complex physical/psychosocial/spiritual condition such as diabetes mellitus (DM). DM has been regarded as a primary care problem, fatalistically viewed as leading to almost inevitable acute and chronic complications secondary to the disease process as well as substantial “non-compliance” with treatment.

Because of this, the huge advances that have marked the last 80 years in the technical understanding of the nature and the treatment of DM have not filtered through to the average Generalist. Of equal, if not greater importance, have been the changes in the philosophy of care of this chronic condition, which have allowed a different approach to introduction of the technical advances. This has allowed better clinical outcomes as well as greater patient and Practitioner satisfaction.

To understand the direction of any different approach, it is often useful to review where we have come from developmentally. Most Health Professionals have been trained in acute-care settings dealing with “sick” people. We are used to solving the mainly physical problems of others with our vast body of knowledge and our healing skills.



Figure 1

Although all of us are trained in “holistic care”, the physical bias necessary in acute medicine has little consequence to the “whole” person over a short period of illness.

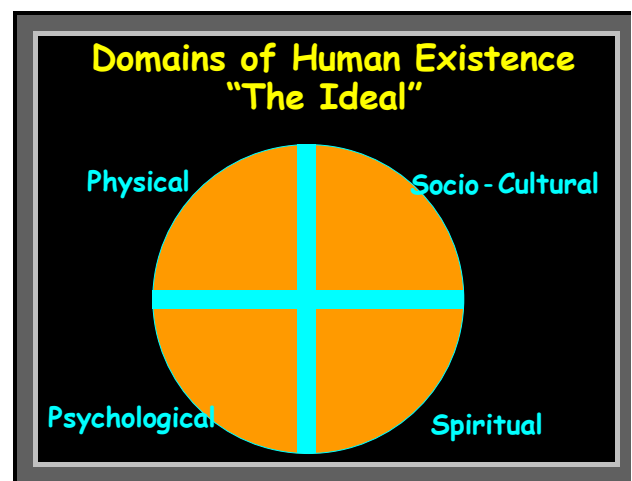


Figure 2

Balance in all life domains (See Figure 2) is soon restored with a return to physical health.

What about DM? It is a **chronic** condition. Chronic, often means lifelong. Every part of human existence is affected. Reversible acute symptoms at the diagnosis of DM are usually accompanied by nagging disturbances in self-image, adjustment and confidence (“my body has failed me” ... “can I do this?”).

Chronic treatment with a physical domain bias according to the “Acute-care model” will inevitably lead to imbalance, “non-compliance” and failure to control. The traditional expectation of “cure” is insufficiently replaced in the mind of the patient by the concept of a lifetime of “control”.

Table 1, below outlines some of the theoretical differences between the understanding and consequent management of, an acute illness and a chronic condition such as DM.

Table 1

	The Acute Model	The Chronic Model	
The Caregiver (Doctor)	<ul style="list-style-type: none"> Often Independent Respected for knowledge & power Practices reactive medicine (problem solver / crisis manager) Parental role Gives and Directs Care – “doing” 	<ul style="list-style-type: none"> They are Team Players in a client centred ecosystem Skilled in listening & sharing knowledge Strategists who prevent problems Should role-model healthy living Adult mentoring role They facilitate self-care 	The Caregiver(s) (Multi-Specialist Health Care Team)
The “Sickness”	<ul style="list-style-type: none"> Usually a unique, defined, symptomatic “event” (e.g. ‘flu, appendicitis), needing “urgent” diagnosis and treatment You feel “ill”, you want to get better, and still you may not take your pills (“non-compliance”) Short-term lifestyle impact Affects individuals mostly (Depends on Severity) Limited stigma Costs usually containable & predictable 	<ul style="list-style-type: none"> A lifelong mostly asymptomatic process with uncertain progression & points of possible relapse Symptoms often mild / absent despite pathology – what’s the problem Doc? (What are you so worried about?) OR chronic - what’s your problem Doc? (Why can’t you fix me?) Lifelong, multiple lifestyle impacts Affects Individual, Family & Community Discrimination & Stigma common How do you quantify a lifetime of multifactor costs? 	The “Condition”
The Approach	<ul style="list-style-type: none"> Goal is Cure Assessment & care has a Physical bias Superficial Therapeutic Relationship Minimal self-care expected – “just do what I tell you to do” “Compliance” with Directives expected 	<ul style="list-style-type: none"> Goal can only be optimum care & control Assessment & care founded on psychosocial & spiritual understanding of the physical person A deep therapeutic relationship Client is expected & trusted to perform major part of monitoring & care & to remain vigilant & respond to acute attacks Lack of “adherence” is feedback that the lifelong treatment plan is not working. Concordance is lacking in the plan 	The Approach
The Treatment (Treating the disease)	<ul style="list-style-type: none"> Pharmacology / Technology / Surgery of short duration and related to the presenting crisis. Event is soon forgotten. Lifestyle change never asked for Rigid Protocols & prescriptions Information supplied on a “Need to know” basis 	<ul style="list-style-type: none"> Recognition that the human dimensions of grief, attitudes, values & beliefs modify the process leading to acceptance of diabetes & its treatment Lifestyle change as important as medicine Treatment plans & “prescriptions” validate the client’s informed choices Education provided with goal of insightful knowledge 	The Treatment (Treating the a person and their diabetes)
The “Patient” (“Diabetic”)	<ul style="list-style-type: none"> Socialised into Infant / Child-like Role Expected to listen carefully to prescribed care Passive – “receiving” care Patient dependent, grateful, admiring Consultation usually associated with Sickness 	<ul style="list-style-type: none"> Socialised as a well adjusted adult / child Expected to verbalise expectations & fears Active role in self care with responsibility Independence facilitated & supported Learns to seek guidance whilst well - Accepts & develops a wellness role 	The “Client” (Person who has diabetes)

Some important points arise from a careful and insightful examination of this table:

1. The **philosophy** and **language** of care of a chronic condition **has** to be different from the acute-care philosophy. You have to be travelling on the same road as your “client” for meaningful communion to take place.
2. **Chronicity**, is not only a major task for the patient to deal with, but also for the caregiver who needs to assume a new professional identity. One cannot hope to facilitate the process of **change** (a major developmental task in DM) if one cannot identify with and manage this process oneself.
3. **Specialised** training and knowledge is needed. This reduces morbidity, mortality, costs and incidence and duration of hospitalisation.
4. DM affects every part of the human experience. One practitioner does not have the necessary knowledge and skills to treat all the different effects. **Team facilitated management** was shown in the Diabetes Control and Complications Trial (DCCT) to be essential in the control of Type 1 DM by “Intensive Therapy”. In addition to the Doctor, input from the Diabetes Educator, Dietician, Podiatrist, Ophthalmologist, Pharmacist, Biokineticist and Psychologist (amongst others), is necessary at different times to maximise care and quality of life. The doctor is not the head of this team – it is the person with

diabetes and their family. Community groups such as the Local Diabetes Association are vital to provide support where most of diabetes care occurs – in the community.

5. **Self-care** is vital and is a major challenge for Health Professionals to facilitate when they and their patients are used to conventional (acute) care approaches. The focus is on the **prevention** of ill health and not its treatment.
6. The acute care approach may form **barriers to diabetes self-care**. The traditional isolated prescription of medication to treat the symptoms of hyperglycaemia has three hidden messages for the “patient”:
 - a. “I am sick”
 - b. “My doctor is in charge (and therefore responsible) for my diabetes care”
 - c. “There is nothing else I need to do except take my medication”

In reality the **three cornerstones of diabetes care** (exercise, meal planning and medication) can only be managed, and their dynamic interplay monitored, by someone who is in a “wellness” role, who is taking responsibility for most of their care and who is supported by a knowledgeable Diabetes Care Team.

The following verse penned by Konrad Lorenz highlights the continuum between “telling” and the resultant long-term behaviour change needed to successfully manage a chronic condition like DM. Whilst it overtly highlights the barriers to self-care, by default it also shows us the potential points at which we all can improve our therapeutic success.

“Said, but not heard
Heard, but not understood
Understood, but not accepted
Accepted, but not put into practice
Put into practice, but for how long?”

The concepts contained above can be used as an “overlay” by which the various technical and teaching issues in diabetes can be made more accessible and relevant for your “patient” – the PERSON who happens to have a condition called diabetes mellitus.

The Centre for Diabetes and Endocrinology (Pty) Ltd (CDE) has developed the Diabetes Preferred Provider Network (PPN). This countrywide network of over 215 Diabetes Centres provides holistic treatment and management of diabetes. The CDE Network has entered into contractual agreements with 35 Medical Aids, to provide this team care to their members who have diabetes. Joining costs the patient absolutely nothing, apart from their time. Benefits available to patients include:

- All diabetes related consultations with a
 - Doctor
 - Accredited Diabetes Educator / Specialist Diabetes Nurse
 - Podiatrist / Chiropodist
 - Dietician
 - and Exercise Specialist
- All diabetes medication, blood glucose meters, testing strips, needles, syringes, etc.
- An annual eye examination with a Specialist Ophthalmologist.
- All necessary laboratory investigations for diabetes.
- Education courses relating to diabetes.
- A 24 hour telephonic “Hotline” to assist with home treatable diabetes emergencies

For further information on membership of the CDE Diabetes Management Programme contact:

Mrs. Sandra Dangerfield @	Tel: (011) 712-6005 or
Mrs. Pat Daniel @	Tel: (011) 712-6024 or
Mrs. Nomsa Mtshahe	Tel: (011) 712-6044

Any Doctor is welcome to join the PPN. For further information on Accrediting as a CDE Centre contact:

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For further clinical / educational information on diabetes contact:

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